TM 11-5820-549-12-1

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR AND ORGANIZATIONAL

MAINTENANCE MANUAL INCLUDING REPAIR PARTS

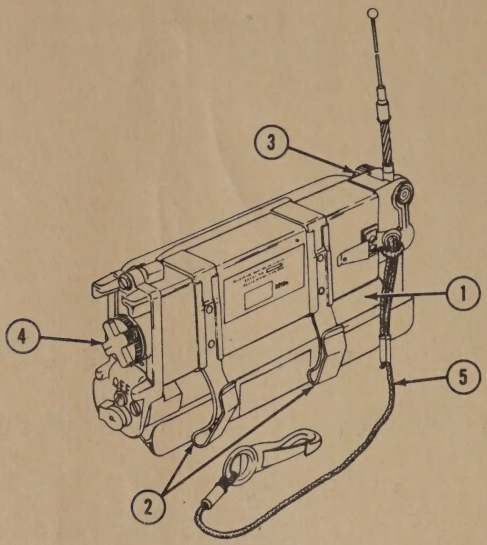
AND SPECIAL TOOL LISTS

RECEIVING SET, RADIO AN/PRR-9(XE-9)

HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1969

CONDENSED OPERATING INSTRUCTIONS FOR RECEIVING SET, RADIO AN/PRR-9 (XE-9)



TO OPERATE SET

THE NUMBERS OF STEPS 1 THROUGH 5 ARE THE SAME AS THE NUMBERS ON THE ILLUSTRATION.

(1) INSERT TUBULAR BATTERY, DRY BA-4534/U THROUGH BATTERY CLIP AND INTO MATING CONNECTOR OF RECEIVER.

(2) CLIP RECEIVER TO HELMET

(3) LOOSEN ANTENNA RETAINING SCREW AND ROTATE ANTENNA UPRIGHT. TIGHTEN SCREW.

(4) RECEIVER CONTROL

FOR RECEIVING WITH SQUELCH: ROTATE RECEIVER CONTROL CLOCKWISE FROM ITS OFF POSITION. SET TO A COMFORTABLE LISTENING LEVEL WHEN VOICE OR TONE IS RECEIVED. IF CONTROL IS ROTATED TO ITS MAXIMUM CLOCKWISE POSITION, SQUELCH WILL BE TURNED OFF (BACKGROUND NOISE WILL BE HEARD). TO REACTIVATE SQUELCH, TURN CONTROL TO OFF, THEN BACK ON.

FOR RECEIVING WITHOUT SQUELCH: ROTATE RECEIVER CONTROL FULLY CLOCKWISE FROM ITS OFF POSITION. ROTATE COUNTERCLOCKWISE FOR COMFORTABLE LISTENING LEVEL. USE RECEIVER WITHOUT SQUELCH WHEN RECEIVED SIGNALS ARE WEAK OR IN TERRAIN UNFAVORABLE FOR GOOD RECEPTION.

(5) RECEIVER MAY BE WORN ON COMBAT SUSPENDERS, OR CLIPPED TO A POCKET OR BELT, IF MAXIMUM RANGE IS NOT REQUIRED. IF RECEIVER IS WORN IN THIS MANNER LOOP CORD END OF LANYARD THROUGH EYELET, PULL HOOK END THROUGH THIS LOOP AND CLIP TO SLIDE ON SUSPENDERS.

TO TURN SET OFF

ROTATE RECEIVER CONTROL TO THE MAXIMUM COUNTERCLOCKWISE POSITION.

EL5820-549-12-1-1

TECHNICAL MANUAL
No. 11-5820-549-12-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., *28 October 1969*

Operator and Organizational Maintenance Manual Including Repair Parts and Special Tool Lists RECEIVING SET, RADIO AN/PRR-9(XE-9)

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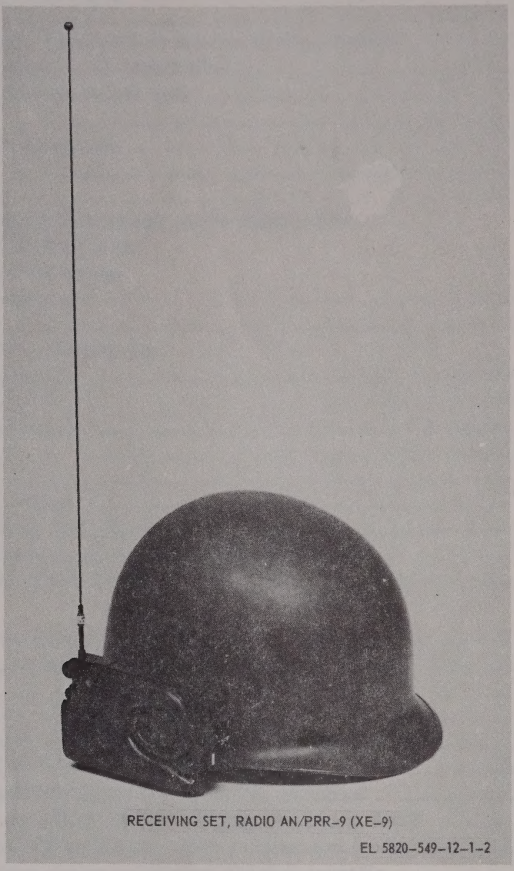

Figure 1-1. Receiving Set, Radio AN/PRR-9(XE-9), mounted on helmet.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope

This manual describes Receiving Set Radio AN/PRR-9(XE-9), and covers its installation and operation and operator's and organizational maintenance. It includes instructions for cleaning, checking, and inspecting the equipment and replacing batteries. The organizational maintenance chapter includes information on troubleshooting and repair procedures within the capabilities of the organizational repairman. Alignment procedures are contained in TM 11-6625-937-12.

1-2. Indexes of Equipment Publications

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions given in TM 38-750.

b. Report of Packaging and Handling Deficiencies. Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58 (Army), NAVSUP Publication 378 (Navy), AFR 71-4 (Air Force), and MCO P4610-5 (Marine Corps).

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38 (Army), NAVSUP Pub 459 (Navy), AFM 75-34 (Air Force), and MCO P4610.19 (Marine Corps).

d. Reporting of Equipment Manual Improvements. Reporting of errors, omissions, and recommendations for improving this manual by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commanding General, U. S. Army Electronics Command, ATTN: AMSEL-ME-NMP-AD, Fort Monmouth, N. J. 07703.

Section II. DESCRIPTION AND DATA

1-4. Purpose and Use (fig. 1-1)

Receiving Set, Radio AN/PRR-9 (XE-9) is a battery-operated, integrated circuit, frequency-modulated (fm), crystal-controlled radio receiver, designed for quick attachment and use on the standard helmet. It receives voice- and tone-modulated signals on a preset frequency in the band of 47 to 57 megahertz (MHz). Reception can be controlled as squelched or unsquelched operation and requires that the received signal contain a 150-hertz (Hz) modulation when the receiver is used for squelched operation. The operating frequency is determined by the crystal installed in the receiver. The operational frequency is 10.7 MHz higher than the crystal frequency. Whenever the crystal is changed to change the operating frequency, the receiver must be realigned using Indicator Channel Alignment ID-1189(XE-2)/PR. An audio horn transducer is attached to the side of the receiver and directs sound under the rim of the helmet toward the operator's ear. Also, the receiver may be used with reduced range when carried in a shirt pocket or clipped to a harness. A headset is supplied. The AN/PRR-9(XE-9) is basically designed to receive signals from Transmitting Set, Radio AN/PRT-4A and can be used with other equipments (para 1-11).

1-5. Technical Characteristics

Frequency range ---------- 47 to 57 MHz.
Tuning ---------- Single-channel, crystal-controlled.
Crystal-type (pluckout) ---- CR-81/U.
Crystal frequency marking (pluckout) ---------- In megahertz. (Use 10.7 MHz below operating channel frequency).
Receiver type ---------- Double-conversion superheterodyne.
Number of integrated circuits ---------- 3.
Number of soldered-in crystals ---------- 1.
Number of pluckout crystals ---------- 1.
Number of printed circuit boards ---------- 1.
Intermediate frequency, first conversion ---------- 10.7 MHz.
Intermediate frequency, second conversion ---------- 455 kHz.
Sensitivity at 3.5-milliwatt output with 3.2-volt battery source ---------- 0.8 μv max.
Image rejection ---------- 40 db.
IF rejection ---------- 60 db.
Frequency stability ---------- 0.01%.
Audio power output ---------- 3.5 mw nominal.
Squelch release point for 10-db noise reduction ---- Less than 0.8 μv.
Audio frequency response ---- 300 to 2,500 db ±3.
Battery-type required ---------- BA-4534/U.
Current drain 3.2 volts:
squelch disabled ---------- 22.0 ma.
With squelch activated ---- 8.0 ma.

1-6. Components

The components of Receiving Set, Radio AN/PRR-9(XE-9) are listed in the following chart:

Quantity	Item	Dimensions (in.) Height	Depth	Width	Unit weight (oz)
1	Receiving Set, Radio AN/PRR-9(XE-9), less antenna, lanyard headset, harness slide, and battery.	3 3/8[a]	1 1/2	5 1/2	7.2
1	Antenna AS-1998/PRR-9	18 1/2			0.3
1	Headset, Electrical H-302(XE-1)/PRR-9				1.1
1	Lanyard assembly, receiving set	16			
1	Slide harness	1 1/8			0.75
1	Battery, Dry BA-4 34/U				1.1[b]

[a] Height, including antenna, is 21 1/2 in.
[b] Used with, but not supplied with, equipment.

1-7. Common Names

A list of the nomenclature assignments for the components of Receiving Set, Radio AN/PRR-9 (XE-9) is given below. A common name is given after each item.

Nomenclature	Common name
Receiving Set, Radio AN/PRR-9(XE-9)	Receiver.
Lanyard assembly, receiving set	Receiver lanyard.
Headset, Electrical H-302 (XE-1)/PRR-9	Headset.
Slide, harness	Slide.
Antenna AS-1998/PRR-9	Receiver antenna.
Indicator, Channel Alignment ID-1189(XE-2)/PR[a].	Alignment indicator.

[a] Not a part of Receiving Set, Radio AN/PRR-9 (XE-9) but is required for organizational maintenance.

1-8. Description of Receiving Set, Radio AN/PRR-9(XE-9) (fig. 1-2)

a. General. The AN/PRR-9(XE-9) is a self-contained, single-channel receiver designed to be used on a standard combat helmet, clipped to a harness, or placed in a shirt pocket. A receiver lanyard is used as a retainer to prevent loss. Three clips are mounted on the receiver case, two of which are used to clip the receiver to the helmet, and the other can be used to clip the receiver to a harness.

b. Receiver Assembly. The electronic assembly is removed from the receiver by removing three screws (fig. 5-2) and pulling the assembly out of the case. Removal is required when changing the channel frequency or aligning the receiver.

c. Receiver Antenna. The receiver antenna is a flexible, stainless steel whip 18 inches long. The antenna is mounted to the antenna housing by the antenna retaining screw and is constructed to permit two operating positions, 90° apart. When the receiver is clipped to the helmet (fig. 1-1), the antenna is positioned perpendicular to the length of the receiver. When the receiver is clipped to the harness, the receiver is positioned parallel with a length of the receiver.

d. Receiver Control. A single, multipurpose receiver control (fig. 3–1) functions as an on-off switch, volume control, and squelch control.

e. Horn Transducer. A horn speaker directs the sound toward the operator's ear when the receiver is worn on the helmet.

1–9. Minor Components of Receiving Set, Radio AN/PRR–9(XE–9) (fig. 1–2)

a. Lanyard Assembly Receiving Set. The receiver lanyard is a 16-inch long cord with a loop at one end and a compression clasp at the other. The loop is fastened to the eyelet on the receiver, and the clasp is attached to the slide on the field pack suspenders.

b. Headset, Electrical H–302(XE–1)/PRR–9. The headset consists of an earpiece, cord, and plug. The earpiece can be worn in the ear to provide secure communications, or for improved listening conditions in noisy areas. The plug on the cord of the headset fits into the headset jack in the receiver (fig. 3–1), and when plugged into the receiver, disconnects the transducer horn.

c. Slide, Harness. The slide is worn on Suspenders, Field Pack, Combat M–1956. The clasp on the receiver lanyard is secured to the slide or the receiver can be attached to the slide by use of the harness slide clip (fig. 3–1) located on the receiver.

1–10. Additional Equipment Required

a. Battery, Dry BA–4534/U (fig. 1–2) is not supplied as part of the receiver but is required for its use. A single conductor male connector in the receiver mates with the connector in the battery. The BA–4534/U provides a nominal 3.2 volts.

b. Crystal is supplied for the receiver for operation on 51 MHz. The crystal is marked 40.3 MHz, which is 10.7 MHz below the operating frequency. Crystals for operation on other frequencies may be required by the using organization, but are not furnished as part of the radio sets. Possible operating frequencies of 47 MHz (crystal marked 36.3 MHz) to 57 MHz (crystal marked 46.3 MHz) may be used in the receiver (para 5–13*c*).

1–11. System Application

Receiving Set, Radio AN/PRR–9(XE–9) can be used for reception when netted with the equipments below if the preset operational frequency of the AN/PRR–9(XE–9), within the range from 47 through 57 MHz, is the same as that of the transmitted signal. The effectiveness of the AN/PRR–9 (XE–9) will be controlled by the siting conditions of the receiver and transmitter.

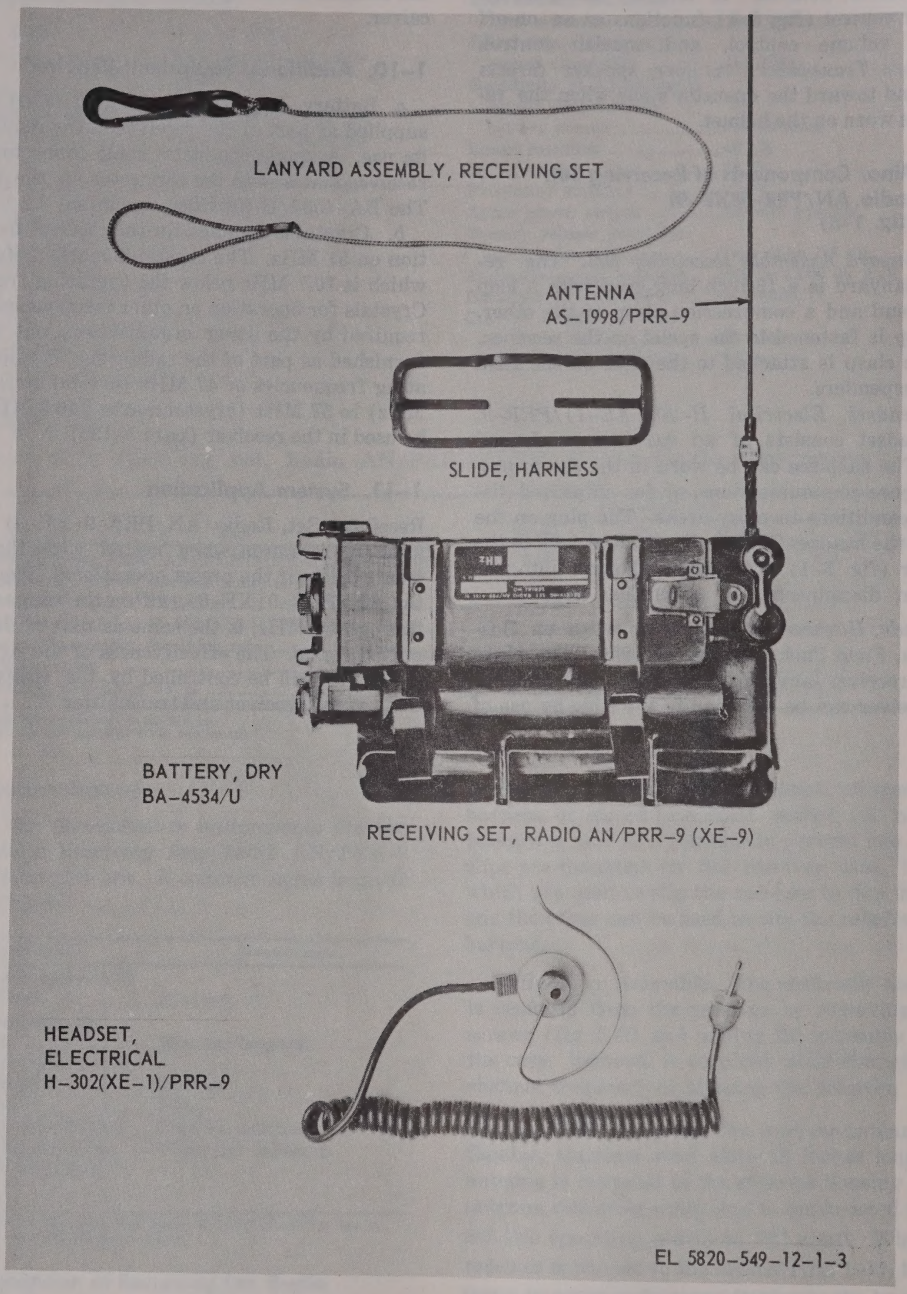

Figure 1-2. Receiving Set, Radio AN/PRR-9 (XE-9), components.

Radio sets	Frequency range (mc)	Channel spacing: every (kHz)	Publication	Remarks
AN/PRC–77[a]	30–75.95	50	TM 11–5820–667–12 TM 11–5820–498–12	
AN/VRC–53, AN/VRC–64, AN/GRC–125, AN/GRC–160[a]	30–75.95	50		
AN/VRC–54[a]	30–75.95	50		Includes AN/VRC–46, AN/PRC–25, and AN/VRC–24.
AN/VRC–12, AN/VRC–43 through AN/VRC–49[a]	30–75.95	50	TM 11–5820–401–10	
AN/ARC–121, AN/ARC–122, AN/ARC–128, and AN/ARC–131[b]	30–75.95	50		
AN/PRC–25[a]	30–75.95	50	TM 11–5820–398–12	
AN/PRC–6	47–55.4	200	TM11–296	Channels provided by preset crystals.
AN/PRC–9	30–38.90	100	TM 11–5820–292–10	
AN/PRC–10	39–54.9	100	TM 11–5820–292–10	
AN/PRC–28	30–42	100	TM 11–5820–292–10	
AN/ARC–44 (modified)	24–51.90	100	TM 11–5821–204–12	
AN/ARC–54[a]	30–69.95	50	TM 11–5821–244–12	
AN/ARC–131[a]	30–75.95	50	TM 11–5820–670–12	
Communications Facility, Mobilized AN/MRC–119 Mobilized AN/MRC–119 and Communications Facility, Jeep Mounted NA/MRC–120[a] (include AN/PRC–25 and AN/VRC–46).	30–75.95	50	TM 11–5820–696–15	
Receiver-Transmitter RT–68/GRC in—	38–54.90	100		
AN/GRC–7, AN/GRC–8			TM 11–284	
AN/VRQ–3			TM 11–287	
AN/VRC–10			TM 11–286	
AN/VRC–15			TM 11–291	
AN/VRC–18			TM 11–611	
AN/VRC–22			TM 11–642	
Receiver-Transmitter RT–70/GRC in—	47–58.40	100	TM 11–290	
AN/GRC–5 through AN/GRC–8			TM 11–284	
AN/VRC–7			TM 11–285	
AN/PRT–4	47–57	100	TM 11–5820–549–12	P/o squad radio; can only transmit; preset crystals.
AN/PRT–4A[a]	47–57	100	TM 11–5280–549–12	P/o squad radio; can only transmit; preset crystals.
AN/PRT–11	38–54	100	TM 11–5820–776–12	Channel provided by preset crystal.
AN/GRC–163			TM 11–5820–713–15	Includes AN/VRC–47.
AN/TSQ–71A[b]		50	TM 11–5895–474–12	
AN/FSQ–75(V)[b]		50	TM 11– 895–590–10	

[a] These radio sets have the 150-Hz squelch feature in their receiver-transmitters and receivers that make them compatible with the RT–841/PRC–77 for squelch operation. (Paragraph 1–4 covers the 150-Hz squelch features required by the AN/PRR–9(XE–9).)

[b] These are radio configurations in which the AN/VRC–46 or AN/VRC–49 is a component.

CHAPTER 2

INSTALLATION

2-1. Unpacking Receiving Set, Radio AN/PRR-9(XE-9) (fig. 2-1)

a. Packaging Data. When packed for shipment, the components of one receiver are placed in a unit carton. Twelve unit cartons are placed in a packing carton.

Package	Dimensions (in.)			Volume (cu ft)	Weight (lb)	Contents
	Height	Width	Depth			
Outer carton ----	21	19 1/2	21 1/4	5.0	40	Twenty unit cartons
Unit carton -----	4 1/4	19 1/2	5 1/4	0.25	1	One receiver and components.

b. Removing Contents.

(1) Open the outer carton.

(2) Remove the unit cartons and open those needed.

(3) Remove any filler material and desiccant.

(4) Remove and open the envelopes that contain the technical manual, headset, lanyard, and slide.

(5) Remove the receiver and receiver antenna.

2-2. Checking Unpacked Equipment

a. Inspect the equipment for possible damage incurred during shipment. If the equipment has been damaged, report the damage on DD Form 6 (para 1-3).

b. See that the equipment is complete as listed on the packing slip. If the packing slip is not available, check the equipment against the basic issue items list (app. B). Report all discrepancies in accordance with TM 38-750. Shortage of a minor assembly or part that does not affect proper functioning of the equipment should not prevent use of the equipment.

c. If the equipment has been used or reconditioned, see whether it has been changed by a modification work order (MWO). If the equipment has been modified, the MWO number will appear near the nomenclature plate. Check to see whether the MWO number (if any) and appropriate notations concerning the modification have been entered in the equipment manual.

NOTE

Current MWO's are listed in DA Pam 310-7.

2-3. Siting

The AN/PRR-9(XE-9) operates at low power and on high frequencies; therefore, the location of the equipment greatly affects the operating range. Normally, a line-of-sight range can be expected; that is, if receiver can be seen from the transmitter location, satisfactory operation is probable. An intervening hill or a tall building may hamper or prevent contact. Valleys, densely wooded areas, and low places may reduce the range of communications. Location on a hilltop or tower, especially if both transmitter and receiver are so located, will increase the operating distance. If possible, avoid locations near a source of electrical interference such as powerlines or telephone lines, radar sets, and field hospitals.

2-4. Installing Antenna AS-1998/PRR-9 (figs. 2-2 and 2-3)

a. Loosen the antenna retaining screw by turning it counterclockwise, and remove it. This screw has two sets of threads. The smaller threads fit the brass insert in the antenna housing. The larger threads fit the hole on the opposite side of the antenna housing.

b. Fit the lower end of the antenna (the end with the hole) between the two threaded members of the antenna housing, with the blades on the

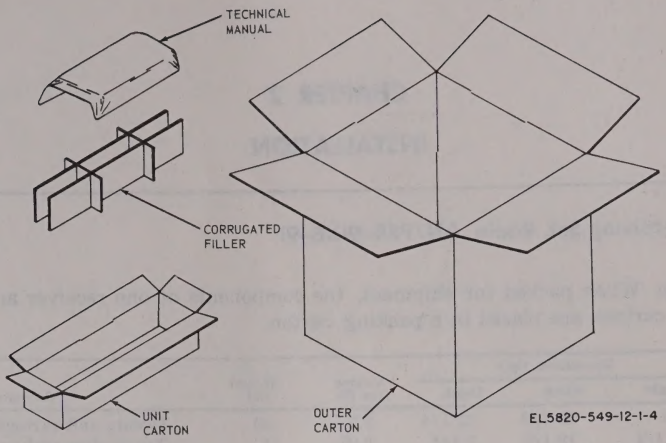

Figure 2–1. Typical packaging.

lower end of the antenna facing the grooves in the antenna housing.

c. Place the antenna retaining screw through the larger hole in the antenna housing, then through the antenna, and into the smaller hole in the antenna housing. Do not tighten the screw.

d. Rotate the antenna until the blades in the lower end of the antenna fit into the desired grooves in the brass insert of the antenna housing. If the receiver is to be worn on the helmet, the antenna should be perpendicular (at a right angle) to the long dimensions of the receiver. When the receiver is carried in a pocket, use the other set of grooves in the brass insert of the antenna housing. For best reception, position the antenna vertically with respect to the ground.

e. Finger tighten the antenna retaining screw securely. Do not overtighten.

2–5. Installing Battery, Dry BA–4534/U (fig. 2–4)

CAUTION

If the receiver is not to be used immediately, be certain the receiver control is turned to the off position (completely counterclockwise). Remove the battery when the receiver is not to be used for a day or more.

a. With the receiver held in one hand, slide the new BA–4534/U through the battery retaining clip.

b. Mate the battery connector with the batte contact pin on the receiver and push it firmly in place.

2–6. Installation of Receiver Lanyard (fig. 3–1)

If the receiver lanyard is to be used, put the lo end of the lanyard through the lanyard eyele Pull the clasp end of the lanyard through th loop. Pull the loop tight. Attach the clasp end the receiver lanyard to the slide on the comb suspenders.

2–7. Installing Receiver on Helmet (fig. 2–5)

a. The receiver is normally worn on the helm (not the helmet liner) opposite the operato right ear, with the receiver control in the fro and the antenna at the rear (fig. 1–1).

b. Place and push the receiver on the helmet that the rim of the helmet fits all the way into t helmet clips on the receiver.

2–8. Installing Headset, Electrical H–302(XE–1)/PRR–9

a. Connect the cord to the earpiece by pushi the two-pin plug into the receptacle on the ea piece (fig. 1–2).

b. Loop the end of the earpiece holder arou

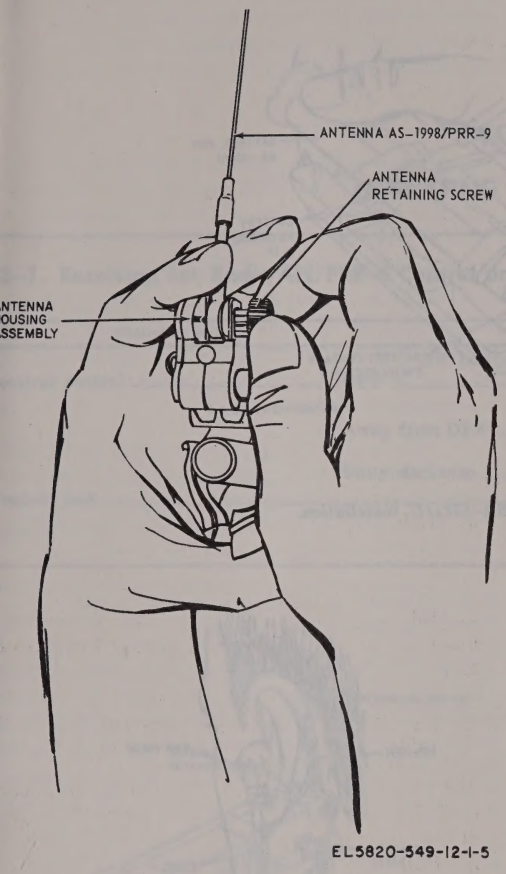

Figure 2-2. Antenna AS-1998/PRR-9, installation.

the ear (fig. 2-6) and place the earpiece of the headset into the ear opening. If the earpiece is to be worn in the left ear, the earpiece can be reversed in its holder.

c. Plug the single-prong connector on the opposite end of the cord assembly into the headset jack. Access to the headset jack, which is located below the receiver control (fig. 3-1), is made by lifting the spring-loaded cover marked "P"

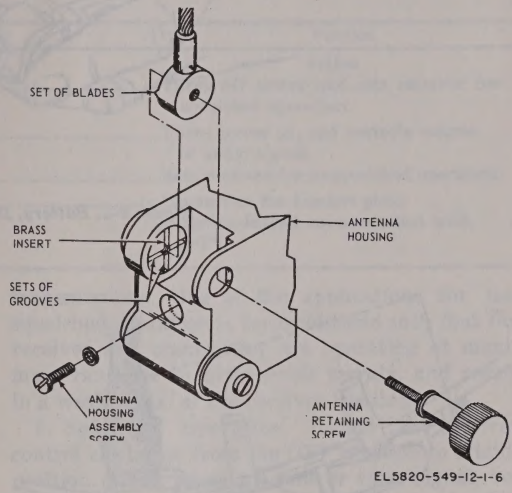

Figure 2-3. Part of AN/PRR-9(XE-9) antenna housing, antenna installation detail.

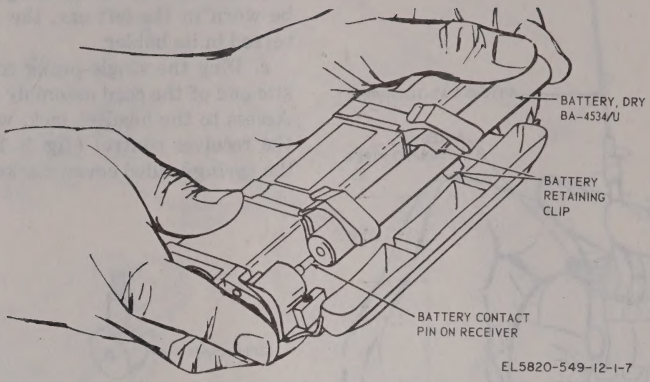

Figure 2-4. Battery, Dry BA-4534/U, installation.

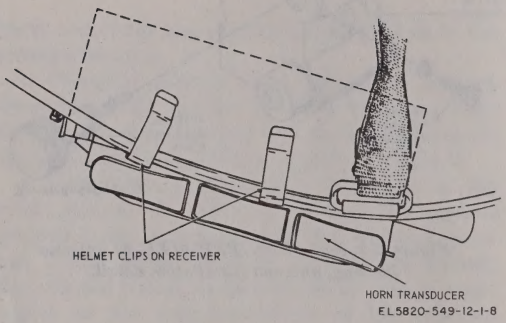

Figure 2-5. Receiving Set, Radio AN/PRR-(XE-9), installation on helmet.

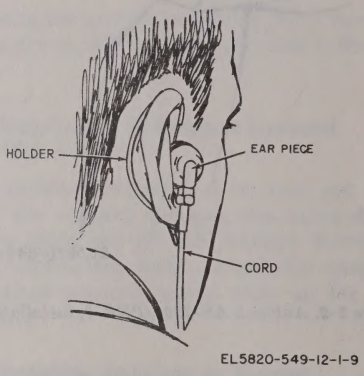

Figure 2-6. Headset, Electrical H-302(XE-1)/PRR- earpiece attachment detail.

CHAPTER 3

OPERATING INSTRUCTIONS

3-1. Receiving Set, Radio AN/PRR-9 Control and Jack

Control or jack	SW position	Function Action
eceiver control	OFF	Turns off power and sets receiver for squelched operation.
	Away from OFF	Turns power on, and controls volume of audio signal.
	Fully clockwise	Sets receiver for unsquelched operation.
eadset jack		Connection for headset plug. Spring-loaded cover marked with a "P"

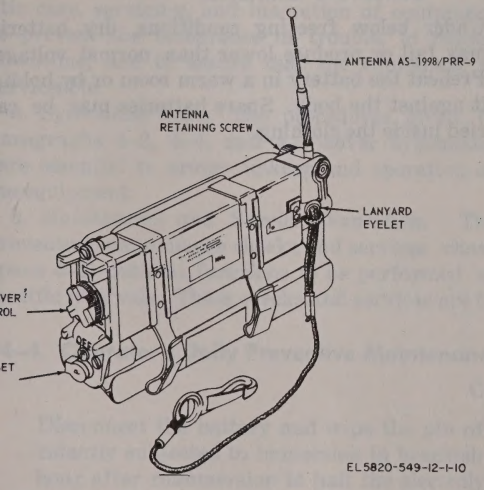

Figure 3-1. Receiving Set, Radio AN/PRR-9(XE-9) receiver control and headset jack.

-2. Receiver Operating Procedure (fig. 3-1)

a. Modes of Operation. The receiver may be perated with or without squelched operation. quelched operation completely quiets the receiver no noise or hissing sound is heard during the sence of a received signal. Unsquelched operaon results in a hissing sound heard between transmissions. One of the applications for unsquelched operation is for conditions such that the receiver and transmitter are operating at maximum range or in unfavorable terrain, and result in a weak signal at the receiver location.

b. Squelched Operation. Rotate the receiver control clockwise from the OFF position to a midposition. Upon hearing a tone or voice signal, rotate the receiver control until the listening level is comfortable. Clockwise rotation increases the loudness of the signal. If the receiver control is rotated clockwise too far, the receiver becomes set for unsquelched operation and a loud hissing sound will be heard between signals. To return the receiver to squelched operation, rotate the receiver control completely counterclockwise to OFF, then rotate it clockwise for a comfortable listening level. Squelched operation can eliminate unwanted signals when the AN/PRR-9(XE-9) operator is receiving signals from a transmitter such as Transmitting Set, Radio AN/PRT-4A. When the AN/PRR-9(XE-9) operator is receiving signals from a transmitter such as Transmitting Set, Radio AN/PRT-4, the operator must use unsquelched operation.

c. Unsquelched Operation. Rotate the receiver control completely clockwise from the OFF position. If a signal is not being received, a loud hissing sound will be heard. When a signal is received, the loud hissing sound will stop. In all cases, the loudness of anything heard can be reduced by rotating the receiver control counter-

clockwise. To return to squelched operation, turn the receiver control to OFF and follow the squelched operation procedure.

d. Antenna Position. To change the position of the receiver antenna, loosen the antenna retaining screw (fig. 2-3), adjust the antenna to the desired position, and tighten the antenna retaining screw. Do not allow receiver antenna to touch the helmet during operation.

e. Headset Operation. When the headset cord plug is connected to the headset jack, the horn speaker is turned off. This operation may be used in noisy locations or for secure operations. See paragraph 2-8 for installation of headset.

3-3. Receiver Stopping Procedure (fig. 3-1)

Turn the receiver control completely counterclockwise to OFF. This turns off power to the receiver.

3-4. Recognition and Identification of Jamming

Under real or simulated tactical conditions, it is possible for the receiver to be jammed by the enemy. Jamming is easily done by transmission of a strong signal on the frequency you are using, which makes it difficult or impossible to hear the desired signal. Unusual noises or strong interference heard on the receiver may be enemy jamming, signals from a friendly station, noise from a local source, or a defective receiver. To det mine whether the interference is originating in t receiver, remove the antenna (para 2-4). If t interference continues, the receiver is defective.

3-5. Antijamming

When jamming of a channel is first noticed, noti the superior officer immediately and continue operate the equipment. To provide maximum i telligibility of jammed signals, try the suggestio given in *a* and *b* below.

a. Vary the receiver volume by rotating the r ceiver control. Try unsquelched operation (pa 3-2*c*). The level of the desired signal may raised enough to be distinguished from the jar ming signal.

b. Change location so that nearby obstructio act as a screen in the direction of probable sites enemy jamming transmitters. If possible, try se eral different locations within the designated ar and stay at one where jamming is minimum.

3-6. Operating Procedure Under Artic Conditions (Batteries)

Under below freezing conditions, dry batteri may fail or produce lower than normal voltage Preheat the battery in a warm room or by holdi it against the body. Spare batteries may be ca ried inside the clothing.

CHAPTER 4

OPERATOR'S MAINTENANCE INSTRUCTIONS

4-1. Scope of Operator's Maintenance

The maintenance duties assigned to the operator of the AN/PRR-9(XE-9) are listed below, together with a reference to the paragraphs covering specific maintenance functions. The duties assigned do not require tools or test equipment.

a. Operator's daily preventive maintenance checks and services (para 4-4).

b. Troubleshooting (para 4-6).

c. Replacement of Battery, Dry BA-4534/U (para 4-7).

4-2. Operator's Preventive Maintenance

Operator's preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, and to assure that the equipment is serviceable.

a. Systematic Care. The procedures given in paragraphs 4-3, 4-4, and 4-5 cover systematic care essential to proper upkeep and operation of the equipment.

b. Maintenance and Service Inspection. The preventive maintenance checks and services chart (para 4-4) outlines functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in combat-serviceable condition; that is, good general (physical) condition and in good operating condition. To assist operators in maintaining combat serviceability, the charts indicate what to check, how to check and the normal conditions; the *References* column lists the illustration or paragraph that contains instructional information. If the defect cannot be remedied by the operator, higher category of maintenance or repair is required. Records of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

4-3. Operator's Preventive Maintenance Checks and Services Periods

Operator's preventive maintenance checks and services of the AN/PRR-9(XE-9) are required on a daily basis. Paragraph 4-4 specifies the checks and services that must be accomplished daily and under the conditions listed below.

a. Before the equipment is used when starting on a mission.

b. When a mission is completed.

c. At least once each week if the equipment is kept in a standby condition.

4-4. Operator's Daily Preventive Maintenance Checks and Services Chart

CAUTION

Disconnect the battery and wipe the pin of the battery plug connector if the equipment is accidently subjected to immersion in brackish (salt) water. The wiping should be done within an hour after reimmersion to halt the electrolytic corrosion of the pin and battery socket terminal.

Sequence No.	Item to be inspected	Procedure	References
1	Receiver	Clean external surface of receiver	Para 4-5.
2	Antenna	Check to see that antenna is straight and unbroken or bent and that retaining screw is tight.	Para 2-4.
3	Horn transducer	Check to see that horn transducer is free from dust and dirt.	Para 4-5.
4	Headset	Check earpiece and cord for cracks and breaks.	Fig. 2-6

Caution: Disconnect the battery when it is known the equipment will not be used for 1 day or longer.

Sequence No.	Item to be inspected	Procedure	References
5	Battery	Check for leakage, corrosion, or swelling. Replace is necessary.	Para 4–7.
6	Receiver lanyard	Check receiver lanyard for frayed or broken cord.	Para 2–6.
7	Receiver control	While making operating check (item 8), check control to make certain switch action is positive and control is smooth and free of external or internal binding.	Fig. 3–1.
		OPERATION	
8	Receiver	*a. Without a signal transmitted.* Turn receiver control completely clockwise. Rushing noise is heard in horn speaker.	Para 4–6.
		b. Unsquelched operation. With an operable AN/PRT–44, operating in the near vicinity (approximately 100 feet away) at the same frequency as the receiver, turn receiver control until a comfortable listening level is heard.	
		(1) Test transmission is heard loud and clear when transmission operator speaks in VOICE operation.	
		(2) Rushing noise is heard in between transmissions.	
		(3) A continuous tone is heard when transmission operator transmits tone signal.	
		(4) Rushing noise is heard in between tone signal transmissions.	
		c. Squelched operation. Turn receiver control completely counterclockwise to OFF position, then turn receiver control to approximately one-half of total range. When signal is heard, adjust the receiver control for a comfortable listening level.	
		(1) Test transmission is heard loud and clear when transmission operator speaks on VOICE operation. No rushing noise noise is heard between transmissions.	
		(2) A continuous tone is heard when transmitter operator transmits tone signals. No rushing noise is heard between transmissions.	
		d. Headset Use. Repeat the procedure in *c* above with headset plugged into headset jack. Same results should be obtained.	

4-5. Cleaning

Inspect the exterior surfaces of the receiver. The exterior surfaces should be free of dust, dirt, grease, and fungus.

a. Remove dust and dirt with a clean, soft cloth. Tap bottom of horn transducer of the receiver to loosen any dirt which may have become lodged in the horn transducer.

WARNING

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT use near an open flame.

Trichloroethane is not flammable, but exposure of fumes to an open flame converts the fumes to highly toxic, dangerous gases.

b. Remove grease fungus and ground-in dirt from the receiver; use a cloth dampened (not wet) with trichloroethane.

c. Remove dust and dirt from plugs and receptacles.

d. Clean the receiver control with a soft cloth. If dirt is difficult to remove, dampen (not wet) the cloth with water and use mild soap.

4-6. Operator's Troubleshooting Chart

Item No.	Trouble symptom	Probable trouble	Checks and corrective measures
1	No rushing noise is heard when receiver control is turned completely clockwise.	Defective battery	*a.* Replace battery (para 4-7). *b.* Check installation of antenna (para 2-4). *c.* If trouble is not corrected, higher category of maintenance repair is required.
2	Signal is weak or is not heard when checked as instructed in paragraph 4-4, item 8	Defective battery	Repeat the instructions in *a*, *b*, and *c* above as required.

4-7. Replacement of Battery, Dry BA-4534/U (fig. 2-4)

a. Hold the receiver in one hand and with the other hand, pull out the old BA-4534/U.

b. Slide the new BA-4534/U through the battery retaining clip and mate the battery connector with the battery contact pin on the receiver and firmly push into position.

CHAPTER 5

ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

5-1. Scope of Organizational Maintenance

a. This chapter covers organizational maintenance, including the changing of channel frequencies, of Receiving Set, Radio AN/PRR-9(XE-9). Also included are instructions for performing preventive maintenance, alignment required when changing channels, and repair which can be accomplished by the organizational repairman. No lubrication is required at organizational maintenance.

b. Organizational maintenance includes—

(1) Preventive maintenance (paras 5-3 through 5-5).

(2) Replacement of antenna housing assembly (para 5-9).

(3) Replacement of receiver Antenna AS-1998/PRR-9 (para 5-10).

(4) Replacement of receiver control knob (para 5-11).

(5) Battery testing (para 5-12).

(6) Changing channel frequencies (para 5-13).

(7) Alignment of receiver (para 5-14).

5-2. Materials, Tools, and Test Equipment Required

The materials, tools, and test equipment required for organizational maintenance are as follows:

a. Indicator, Channel Alignment ID-1189/(XE-2)/PR. (TM 11-6625-937-12).

b. Trichloroethane.

c. Toolkit, Operations Central TK-101/G.

5-3. Organizational Preventive Maintenance

a. Preventive maintenance is the systematic care, inspection, and servicing of the equipment to maintain it in a serviceable condition, to prevent breakdown, and to assure maximum operational capability. Preventive maintenance is the responsibility of all categories of maintenance concerned with the equipment and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and test indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services of the AN/PRR-9 (XE-9) at organizational maintenance are made at monthly intervals unless otherwise directed by the commanding officer.

b. Maintenance forms and records to be used and maintained on the equipment are specified in TM 38-750.

5-4. Organizational Monthly Maintenance

Perform the maintenance functions indicated on the monthly preventive maintenance checks and services chart (para 5-5) once each month. A month is defined as approximately 30 calendar days at 8-hour-per-day operation. If the equipment is operated 16 hours a day, the monthly preventive maintenance checks and services should be performed at 15-day intervals. Adjustment of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have monthly preventive maintenance checks and services performed on it. Equipment in limited storage (requires service before operation) does not require monthly preventive maintenance.

5-5. Organizational Monthly Preventive Maintenance Checks and Services Chart

Sequence No.	Item to be inspected	Procedure	References
1	Completeness	See that the equipment is complete	App. B.
2	Preservation	Check all surfaces for evidence of fungus. Remove rust spots and corrosion and spot paint bare spots.	Para 5-6.

Sequence No.	Item to be inspected	Procedure	References
3	Publications	See that all publications are complete, serviceable, and current.	DA Pam 310-4.
4	Modifications	Check DA Pam 310-7 to determine if new applicable MWO's have been published. All MWO's must be applied.	TM 38-750 and DA Pam 310-7.
5	Batteries	Check batteries in alignment indicator	Para 5-12.
6	Transmitter and receiver	Complete operational checks are covered in operator's daily preventive maintenance checks and services chart.	Para 4-4

5-6. Touchup Painting

Clean all damaged surface of the equipment. Touch up the damaged paint on metal surfaces. For detailed cleaning and refinishing practices, refer to TB 746-10.

5-7. Organizational Troubleshooting

a. General. Troubleshooting of this equipment is based upon the operational checks in the operator's daily preventive maintenance checks and services chart (para 4-4). To troubleshoot the equipment, perform procedures in paragraph 4- starting with item 8, until an abnormal conditio or symptom is observed. Perform the checks an corrective measures indicated in the troubleshoot ing charts. If the corrective measures do not re sult in correction of the trouble, higher categor of maintenance is required. The listed checks an corrective measures in the organizational trouble shooting chart supplement those that appear i the operator's troubleshooting chart (para 4-6).

b. Troubleshooting Chart.

Item No.	Trouble symptom	Probable trouble	Checks and corrective measures
1	Signal is weak or not heard when checked as in item 8, paragraph 4-4.	*a.* Defective antenna	*a.* Check antenna (item 2, para 4-4) and replace defective antenna (para 5-10).
		b. Improperly aligned receiver	*b.* Align receiver (para 5-14).
		c. Cracked antenna housing assembly	*c.* Replace antenna housing assembly (para 5-9).
2	Adjustment of antenna loading coil during alignment procedures produces no results.	Defective antenna housing assembly.	Replace antenna housing assembly (para 5-9).

5-8. Repair

The components of the AN/PRR-9(XE-9), listed in appendix D, may be replaced by organizational personnel. Instructions for these repairs are given in chapter 4 and paragraphs 5-9 through 5-15.

5-9. Replacement of AN/PRR-9(XE-9) Antenna Housing Assembly

a. Remove Antenna AS-1998/PRR-9 (fig. 2-3) by turning antenna retaining screw counterclockwise until the screw and antenna are free.

b. Remove antenna housing assembly screw. Pull the antenna housing assembly away from the end of the AN/PRR-9(XE-9) casing.

CAUTION

Be careful not to bend pin J1 (fig. 5-1) when positioning the new antenna housing assembly in place on the AN/PRR-9(XE-9) casing.

c. Position the new antenna housing assembly on the AN/PRR-9(XE-9) casing so that pin J1 mates with plug P1, and secure the assembly in place with the antenna housing assembly screw (fig. 2-3).

d. Replace Antenna AS-1998/PRR-9 (para 5-10).

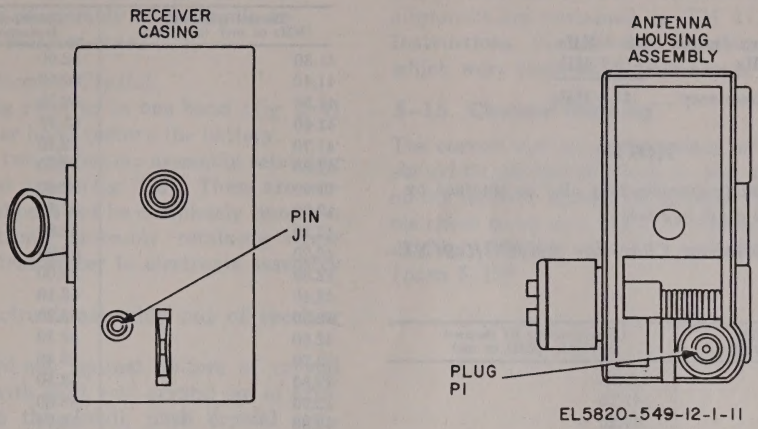

Figure 5-1. Mounting faces of receiver casing and antenna housing assembly.

-10. Replacement AS-1998/PRR-9

a. Loosen antenna retaining screw, and remove crew from antenna housing. Note that this screw as two sets of threads. The smaller threads fit ne brass insert in the antenna housing. The rger threads fit the hole on the opposite side of ne antenna housing.

b. Remove and discard the defective antenna.

c. Fit the lower end of the antenna (the end ith the hole) between the two threaded members f the antenna housing. Make certain the antenna et of blades (fig. 2-3) facs the antenna housing rass insert set of grooves.

d. Place the antenna retaining screw through ne larger hole in the antenna housing, then rough antenna, and into the smaller hole in the ntenna housing. Do not tighten.

e. Rotate the antenna until the blades on the wer end of the antenna fit into the desired ooves in the brass insert of the antenna housing.

f. Finger tighten the antenna retaining screw curely Do not overtighten.

-11. Replacement of Receiver Control Knob (fig. 5-2)

a. With hexagonal socket key (Allen wrench) r a No. 4 setscrew, loosen two setscrews in re- iver control knob.

b. Remove old knob by pulling it straight off.

c. With pliers, carefully turn shaft of receiver ntrol fully counterclockwise.

d. Loosen setscrews on new knob, so the knob ll fit on receiver control shaft.

e. Place white pointer on new knob opposite center of word OFF on front of receiver. Tighten one setscrew.

f. Rotate receiver control to provide access to second setscrew. Tighten setscrew.

g. Check rotation of receiver control to be sure knob does not rub against receiver housing at any point. If knob rubs, loosen setscrews and raise knob slightly away from receiver housing. Tighten setscrews and recheck operation.

5-12. Battery Testing

Battery, Dry BA-4534/U may be tested in Indicator, Channel Alignment ID-1189(XE-2)/PR equipped with Adapter, Battery, U-389(XE-1)/PR. For testing purposes, the battery is first removed from the equipment (para 4-7). Specific instructions for battery testing are covered in TM 11-6625-937-12.

5-13. Changing Channel Frequencies

a. General. The frequency of operation of the AN/PRR-9(XE-9) can be changed by replacing the pluckout crystal with a crystal for the new channel and realigning the equipment. Instructions for changing crystals are given in *e* below. Instructions for alignment are given in paragraph 5-14.

b. Determining Crystal Frequency. The AN/PRR-9(XE-9) uses Crystal CR-81/U. The crystal frequency, which is marked on the crystal, is 10.7 MHz below the channel or operating frequency. To compute the crystal frequency, determine the desired channel frequency and subtract 10.7 MHz.

Example:

Channel frequency desired ___53-9 MHz
Subtract 10.7 MHz _____-10.7 MHz

Correct crystal frequency ___ 43.2 MHz

NOTE

Correct crystal frequencies may also be obtained by consulting the chart in *c* below.

c. Crystal Selection Chart for AN/PRR-9(XE-9).

Crystal marking (MHz or mc) (esc freq)	Corresponding Rf channel frequency (MHz or mc)
36.30	47.00
36.40	47.10
36.50	47.20
36.60	47.30
36.70	47.40
36.80	47.50
36.90	47.60
37.00	47.70
37.10	47.80
37.20	47.90
37.30	48.00
37.40	48.10
37.50	48.20
37.60	48.30
37.70	48.40
37.80	48.50
37.90	48.60
38.00	48.70
38.10	48.80
38.20	48.90
38-30	49.00
38.40	49.10
38.50	49.20
38.60	49.30
38.70	49.40
38.80	49.50
38.90	49.60
39.00	49.70
39.10	49.80
39.20	49.90
39.30	50.00
39.40	50.10
39.50	50.20
39.60	50.30
39.70	50.40
39.80	50.50
39.90	50.60
40.00	50.70
40.10	50.80
40.20	50.90
40.30	51.00
40.40	51.10
40.50	51.20
40.60	51.30
40.70	51.40
40.80	51.50
40.90	51.60
41.00	51.70
41.10	51.80
41.20	51.90
41.30	52.00
41.40	52.10
41.50	52.20
41.60	52.30
41.70	52.40
41.80	52.50
41.90	52.60
42.00	52.70
42.10	52.80
42.20	52.90
42.30	53.00
42.40	53.10
42.50	53.20
42.60	53.30
42.70	53.40
42.80	53.50
42.90	53.60
43.00	53.70
43.10	53.80
43.20	53.90
43.30	54.00
43.40	54.10
43.50	54.20
43.60	54.30
43.70	54.40
43.80	54.50
43.90	54.60
44.00	54.70
44.10	54.80
44.20	54.90
44.30	55.00
44.40	55.10
44.50	55.20
44.60	55.30
44.70	55.40
44.80	55.50
44.90	55.60
45.00	55.70
45.10	55.80
45.20	55.90
45.30	56.00
45.40	56.10
45.50	56.20
45.60	56.30
45.70	56.40
45.80	56.50
45.90	56.60
46.00	56.70
46.10	56.80
46.20	56.90
46.30	57.00

d. Access to Crystals. To change crystals, it i necessary to partially disassemble the equipmen Use the screwdriver located in the ID-1189/P cover.

CAUTION

When changing crystals, be extremely careful not to disturb any other parts on the printed circuit board. Make cer-

tain receiver control panel gasket is in place before reassembly of electronic assembly and receiver case.

e. Changing Receiver Crystal.

(1) Hold the receiver in one hand (fig. 2–4) and with the other hand remove the battery.

(2) Loosen two electronic assembly retaining screws from front panel (fig. 5–2). These are captive screws and should not be completely removed. Remove one electronic assembly retaining screw that holds horn transducer to electronic assembly front plate.

(3) Pull electronic assembly out of receiver case.

(4) Pull cord out against bottom of crystal (fig. 5–3), and with cord, pull crystal out of crystal socket. With thumbnail, push crystal completely out of crystal holder.

(5) Place cord between two contacts of crystal socket with free end of cord toward back of electronic unit assembly.

(6) Start connector pins of new crystal into crystal socket. Be sure cord is between pins.

(7) Push crystal into crystal holder, then straight in to seat pins in socket.

(8) Align according to paragraph 5–14.

5–14. Alignment

Whenever the operating frequency of the receiver is changed, it is necessary to realign the equipment for proper operation. Alignment is accomplished by the use of Indicator, Channel Alignment ID–1189(XE–2)/PR equipped with Adapter, Receiving Set MX–8512(XE–1)/PR and Adapter, Battery U–389(XE–1)/PR. Complete instructions for alignment are contained in TM 11–6625–937–12. Instructions include the replacement of parts which were removed to gain access to the crystal.

5–15. Channel Marking

The correct operating frequency of the receiver should be marked in pencil in the space provided on the receiver identification plate (fig. 1–2). Double check to be sure you are writing the actual operating frequencies, not the crystal frequency (para 5–13).

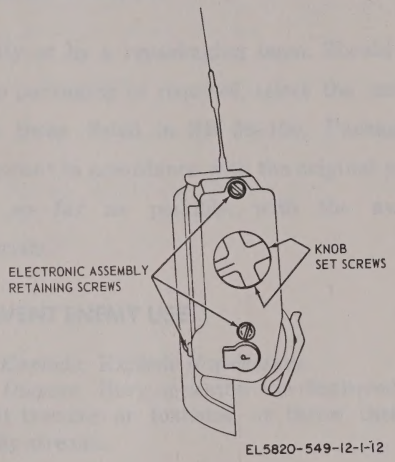

Figure 5–2. Receiving Set, Radio AN/PRR–9(XE–9), disassembly.

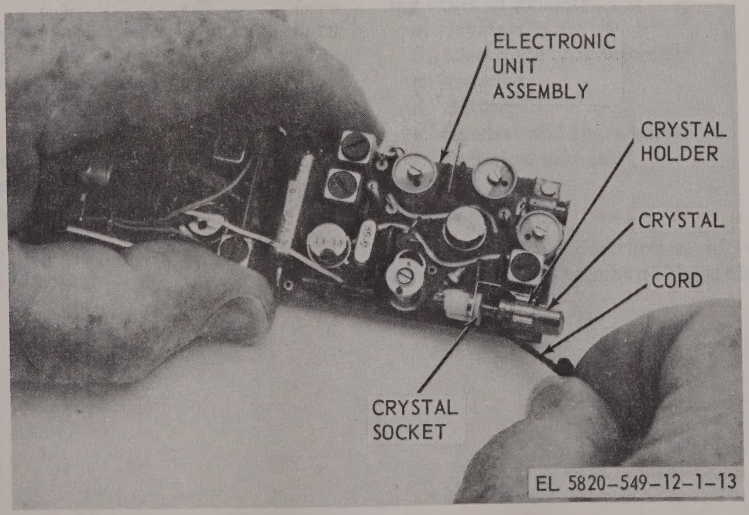

Figure 5–3. Receiving Set, Radio AN/PRR–9(XE–9), crystal removal.

CHAPTER 6

SHIPMENT, LIMITED STORAGE, AND DEMOLITION TO PREVENT ENEMY USE

Section I. SHIPMENT AND LIMITED STORAGE

6-1. Disassembly of Equipment

Remove the antenna by removing the antenna retaining screw and lifting the antenna out. Replace and tighten the antenna retaining screw. Remove the battery.

6-2. Repackaging

Repackaging of equipment for shipment or limited storage normally will be performed at a packaging facility or by a repackaging team. Should emergency packaging be required, select the materials from those listed in SB 38-100. Package the equipment in accordance with the original packaging, so far as possible, with the available materials.

Section II. DEMOLITION TO PREVENT ENEMY USE

6-3. Authority for Demolition

Demolition of the equipment will be accomplished only upon order of the commander. Use the destruction procedures outlined in paragraph 6-4 to prevent further use of the equipment.

6-4. Methods of Destruction

Use any of the following methods to destroy the equipment:

a. Smash. Smash the control, headsets, horn transducer, and electronic assembly.

b. Cut. Cut headset cord and lanyard.

WARNING

Be extremely careful with explosives and incendiary devices. Use these items only when the need is urgent.

c. Burn. Burn technical manuals.

d. Bend. Bend the case.

e. Explode. Explode if necessary.

f. Dispose. Bury or scatter the destroyed parts in slit trenches or foxholes, or throw them into nearby streams.

6-5. Priorities for Destruction

When lack of time prevents complete destruction of the equipment, destroy equipment in the following order of priority:

a. Crystals.
b. Electronic unit assembly.
c. Antenna.
d. Battery.
e. Headset and spare parts.
f. Technical manual.

6-6. Reporting

Reporting of the destruction of equipment will be made through command channels.

APPENDIX A

REFERENCES

Following is a list of references available to the organizational repairman of Receiving Set, Radio AN/PRR-9(XE-9).

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U. S. Army Equipment Index of Modification Work Orders.
SB 38-100	Preservation, Packaging, and Packing Materials, Supplies and Equipment Used by the Army.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 11-6625-937-12	Organizational Maintenance Manual Including Repair Parts; Indicator Channel Alignment ID-1189/PR.
TM 38-750	Army Equipment Record Procedures.

APPENDIX B

BASIC ISSUE ITEMS

Section I. INTRODUCTION

-1. Scope

his appendix lists items which accompany the Re-eiving Set, Radio AN/PRR-9 (XE-9) or are re-uired for installation, operation, or operator's naintenance.

-2. General

his basic issue items list is divided into the fol-owing sections:

a. Basic Issue Items—Section II. A list of items hich accompany the AN/PRR-9 (XE-9) and are equired by the operator/crew for installation, op-ration, or maintenance.

b. Maintenance and Operating Supplies—Sec-on III. Not applicable.

-3. Explanation of Columns

he following provides an explanation of columns section II.

a. Source, Maintenance, and Recoverability odes (SMR), Column 1.

(1) Source codes, indicate the selection status nd source for the listed item. Source codes are—

ode	Explanation
'—	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system and authorized for use at indicated maintenance categories.
'2—	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
9—	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army CONSEC logistic system, and which are subject to the provisions of AR 380-41.
0—	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for CONSEC support, which are accountable under the provisions of AR 380-41.
I—	Repair parts which are not procured or stocked, but are to be manufactured in indicated maintenance levels.

Code	Explanation
A—	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately, and can be assembled to form the required assembly at indicated maintenance categories.
X—	Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.
X1—	Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.
X2—	Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned with accompanying justification,
C—	Repair parts authorized for local procurement. Where such repair parts are not obtainable from local procurement, requirements will be requisitioned through normal supply channels accompanied by a supporting statement of nonavailability from local procurement.
G—	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance code, indicates the lowest category of maintenance authorized to install the listed item. The maintenance level code is—

Code	Explanation
C—	Operator/crew

(3) Recoverability codes indicate whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are—

Code	Explanation
R—	Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.

Code	Explanation
S	Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.
T	High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.
U	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high-dollar value reusable casings or castings.

b. Federal Stock Number, Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure (U/M), Column 4. A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit, Column 5. This column indicates the quantity of the item used in the AN/PRR-9 (XE-9). A "V" appearing in this column in lieu of a quantity indicates that a definite quantity cannot be indicated (e.g., shims, spacers, etc.).

f. Quantity Furnished With Equipment, Column 6. This column indicates the quantity of an item furnished with the equipment.

g. Illustration, Column 7. This column is divided as follows:

(1) *Figure number, column 7a.* This column indicates the figure number of the illustration in which the item is shown.

(2) *Item number, column 7b.* This column indicates the callout number used to reference the item in the illustration.

B-4. Explanation of Columns in the Tabular List of Maintenance and Operating Supplies—Section III

Not applicable.

B-5. Special Information

Dry batteries shown are used with the equipment but are not considered part of the equipment. They will not be preshipped automatically but are to be requisitioned in quantities necessary for the particular organization, in accordance with SB 11-6.

SECTION II. BASIC ISSUE ITEMS

(1) SMR CODE	(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code	USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) QTY FURN WITH EQUIP	(7) ILLUSTRATIONS (a) FIG. NO.	(7) ILLUSTRATIONS (b) ITEM NO. OR REFERENCE DESIGNATION
		RECEIVING SET, RADIO AN/PRR-9 (XE-9): (This item is nonexpendable) Consisting of the following items required to have a complete operable equipment.					1-2	
	5985-926-2590	ANTENNA ASSEMBLY AS-1998/PRR-9 (1ea)					1-2	E1
		BATTERY, DRY BA-4534/U (1ea)						BT1
		HEADSET, ELECTRICAL H-302(XE-1)/PRR-9: (1ea) SMB-523760; (80063)					1-2	HT1
	5985-933-2879	LANYARD ASSEMBLY: (1ea) SMB-523304; (80063)					1-2	A4
	5820-995-2261	SLIDE, HARNESS: (1ea) SMB-52391; (80063)					1-2	MP3
		TECHNICAL MANUAL TM 11-5820-549-12-1		ea	1	1		
		Requisition through pinpoint account number if assigned; otherwise through nearest Adjutant General facility.						
		For technical manuals the quantity indicates the maximum number of copies authorized for packing (or issue) with the equipment. Where a number of these equipments are concentrated in a small area, the quantity on hand may be reduced to the minimum acutal requirements as determined by the commanding officer of the unit.						
		NO PARTS AUTHORIZED OPERATOR/CREW						
		NO BASIC ISSUE ITEMS ARE MOUNTED IN OR ON THIS EQUIPMENT						

APPENDIX C

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Receiving Set, Radio AN/PRR-9 (XE-9). It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine serviceability of an item by comparing its physical, mechanical, and electrical characteristics with established standards.

b. Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc. This is accomplished with external test equipment and does not include operation of the equipment and operator type tests using internal meters or indicating devices.

c. Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, such as painting and lubricating, be defined separately, they may be so listed.

d. Adjust. To rectify to the extent necessary to bring into proper operating range.

e. Align. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized. This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. Calibrate. To determine the corrections to be made in the readings of instruments or test equipment used in precise measurements. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

g. Install. To set up for use in an operational environment such as an encampment, site or vehicle.

h. Replace. To replace unserviceable items with serviceable like items.

i. Repair. To restore an item to serviceable condition through correction of a specific failure or unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straightening, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. Overhaul. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

k. Rebuild. The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in accordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

l. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level at which that particular maintenance function is to be performed.

C-3. Explanation of Format

a. Column 1, Group Number. Not applicable.

b. Column 2, Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	Maintenance category
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

d. Column 4, Tools and Test Equipment. Column 4 specifies, by code, those tools and test equipments required to perform the designat function. The numbers appearing in this colun refer to specific tools and test equipments whi are identified in table I.

e. Column 5, Remarks. Self-explanatory.

C-4. Explanation of Format of Table I, Tool and Test Equipment Requirements

The columns in table I are as follows:

a. Tools and Equipment. The numbers in th column coincide with the numbers used in the too and equipment column of the maintenance alloc tion chart. The numbers indicate the applicab tool for the maintenance function.

b. Maintenance Category. The codes in this co umn indicate the maintenance category normal allocated the facility.

c. Nomenclature. This column lists tools, te and maintenance equipment required to perfor the maintenance functions.

d. Federal Stock Number. This column lists th Federal stock number of the specific tool or te equipment.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	RECEIVING SET, RADIO AN/PRR-9 (XE-9)	C												Exterior only
			C											Operational tests only
			O										2	Operational tests and battery test
			D										2,5-16	All tests
				C										Exterior only
				O										Exterior only
						O							2	After crystal replacement
										C				Repair by replacement of battery only
										O			1	Repair by replacement and discard of Case Assembly, Antenna Assembly, Antenna Knob, Switch Knob, Headset, Lanyard Assembly, Slide, Antenna Housing Assembly and
										D			3&4	Repair by replacement of switch assembly
										D			3,4	All repairs
														Shop support
	ELECTRONIC ASSEMBLY	O												Visual inspection
			D										2, 5-16	All test required to locate faulty components
						O							2	Alignment after installation of new crystal
										D			3,4	Repair by replacement of faulty components
											D		3,4	Shop support

SECTION II. MAINTENANCE ALLOCATION CHART (CONT)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS											TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD		
	AN/PRR-9 (XE-1) (cont)													
	CASE ASSEMBLY	C								O			1	Exterior only Repair by replacement and discard of case
	ANTENNA HOUSING ASSEMBLY	C				O							2	Exterior only Align after crystal installation
										O			1	Repair by replacement and discard of assembly

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
1	O	TOOL KIT TK-101/G	5180-064-5178	
2	O,D	CHANNEL ALIGNMENT INDICATOR ID-1189/PR	5120-930-9204	
3	O	TOOL KIT TK-100/G	5180-605-0079	
4	D	TOOL KIT TK-105/G	5180-610-8177	
5	D	MULTITESTER TS-352B/U	6625-242-5023	
6	D	VOLTMETER ME-30A/U	6625-669-0742	
7	D	MILLIAMMETER (CLIP-ON) HEWLETT-PACKARD 428B		
8	D	SPECTRUM ANALYZER TS-723( )/U	6625-668-9418	
9	D	OUTPUT METER TS-585( )/U	6625-244-0501	
10	D	SIGNAL GENERATOR AN/URM-103	6625-868-8352	
11	D	SIGNAL GENERATOR AN/GRM-50	6625-868-8353	
12	D	POWER SUPPLY PP-3514( )/U	6625-445-6933	
13	D	ELECTRONIC COUNTER AN/USM-207	6625-911-6368	
14	D	AUDIO OSCILLATOR TS-421( )/U	6625-669-0228	
15	D	R. F. PAD (CONSTRUCTED AT DEPOT)		
16	D	STANDARD AUDIO LOAD (CONSTRUCTED AT DEPOT)		

APPENDIX D

ORGANIZATIONAL MAINTENANCE REPAIR PARTS AND SPECIAL TOOL LISTS

Section I. INTRODUCTION

-1. Scope

is manual lists repair parts and special tools re-ired for the performance of organizational main-nance of the AN/PRR-9 (XE-9).

-2. General

is repair parts and special tools lists is divided o the following sections:

a. Prescribed Load Allowance (PLA)—Sec-n II. A composite listing of the repair parts, ecial tools, test and support equipment having antative allowances for initial stockage at the ganizational level.

b. Repair Parts—Section III. A list of repair rts authorized for the performance of mainte-nce at the organizational level.

c. Special Tools, Test and Support Equipment—ction IV. Not applicable.

NOTE

All indexes noted below are cross-referenced to index numbers. The index numbers appear in ascending sequence in column 1 of the repair parts list. The index number for the particular item will be the same for the item in all sections of this appendix.

d. Federal Stock Number Cross-Reference to dex Number—Section V. A list of Federal ock numbers in ascending numerical sequence oss-referenced to index (sequence) numbers.

e. Figure and Item Number Cross-Reference to dex Number—Section VI. A list of illustration ure numbers in numerical sequence cross-refer-ced to item number (reference designation) and dex numbers.

f. Reference Designation Cross-Reference to In-x Number—Section VII. A list of reference des-nations (or item numbers) to index numbers.

D-3. Explanation of Columns

The following provides an explanation of columns in the tabular lists.

a. Source, Maintenance, and Recoverability Codes (SMR), Column 1.

(1) Source codes indicate the selection status and source for the listed item. Source codes are—

Code	Explanation
P	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system and authorized for use at indicated maintenance categories.
P2	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
P9	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army COMSEC logistic system, and which are not subject to the provisions of AR 380-41.
P10	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380-41, and which are stocked and supplied by the Army COMSEC logistic system.
M	Repair parts which are not procured or stocked, but are to be manufactured at indicated maintenance levels.
A	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately and can be assembled to form the required assembly at indicated maintenance categories.
X	Parts and assemblies which are not procured or stocked and the mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.
X1	Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.

Code	Explanation
X2	Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned, with accompanying justification, through normal supply channels.
G	Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance codes indicate the lowest category of maintenance authorized to install the listed item. The maintenance level codes are—

Code	Explanation
C	Operator/crew
O	Organizational maintenance

(3) Recoverability codes indicate whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are—

Code	Explanation
R	Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.
S	Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by a GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.
T	High-dollar value recoverable repair parts which are subject to special handling and are isuued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.
U	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high-dollar value reusable casings or castings.

b. Federal Stock Number, Column 2. This column indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. Description, Column 3. This column indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses.

d. Unit of Measure, Column 4. A 2-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft, ea, pr, etc.

e. Quantity Incorporated in Unit, Column This column indicates the quantity of the it used in AN/PRR-9 (XE-9). A "V" appearing this column in lieu of a quantity indicates that definite quantity cannot be indicated (e.g., shi spacers, etc.).

f. 15-Day Organizational Maintenance Allo ances, Column 3 of Section II and Column 6 of S tions III and IV.

(1) The allowance columns are divided i four subcolumns. Indicated in each subcolumn posite the first appearance of each item is the to quantity of items authorized for the number equipments supported. Subsequent appearances the same item will have the letters "REF" in t allowance columns. Items authorized for use as quired but not for initial stockage are identifi with an asterisk in the allowance column.

(2) The quantitative allowances for organi tional level of maintenance represents one init prescribed load for a 15-day period for the numb of equipments supported. Units and organizatio authorized additional prescribed loads will mu ply the number of prescribed loads authorized the quantity of repair parts reflected in the densi column applicable to the number of items suppo ed to obtain the total quantity of repair parts a thorized.

(3) Organizational units providing main nance for more than 100 of these equipments sh determine the total quantity of parts required converting the equipment quantity to a decim factor by placing a decimal point before the ne to last digit of the number to indicate hundredt and multiplying the decimal factor by the pa quantity authorized in the 51-100 allowance c umn. *Example,* authorized allowance for 51-1 equipments is 40; for 150 equipments multi 40 by 1.50 or 60 parts required.

(4) Subsequent changes to allowances will limited as follows: No change in the range items is authorized. If additional items are co sidered necessary, recommendation should be fo warded to Commanding General, U. S. Army Ele tronics Command, ATTN: AMSEL-ME-NMI CR, Fort Monmouth, N. J., 07703 for exception revision to the allowance list. Revisions to t range of items authorized will be made by t USA ECOM national maintenance point based u on engineering experience, demand data, TAERS information.

g. Illustration, Column 7. This column is d vided as follows:

(1) *Figure number, column 7a.* Indicates t figure number of the illustration in which the ite is shown.

(2) *Item number, column 7b.* Indicates the llout number used to reference the item in the ustration.

-4. Special Information

pair parts mortality is computed from failure es derived from experience factors with the in- idual parts in a variety of equipments. Varia- ns in the specific application and periods of e of electronics equipment, the fragility of elec- nic piece parts, plug intangible material, and ality factors intrinsic to the manufacture of ctronic parts, do not permit mortality to be sed on hours of end item use. However, long iods of continuous use under adverse conditions e likely to increase repair parts mortality.

-5. Location of Repair Parts

a. This manual contains three cross-reference lexes (secs. V, VI, and VII) to be used to locate a repair part when either the Federal stock number, reference number (manufacturer's part number), figure number, or reference designation is known. The first column in each cross-reference index is prepared, as applicable, in numerical or alphanumerical sequence. The last column of each cross-reference index lists the index number assigned to the part.

b. Refer to the appropriate cross-reference index (para 2*d, e, f*) and note the index number in the last column; then refer to the repair parts list to locate the index number which is listed in ascending order in column 1 of the repair parts list.

D-6. Federal Supply Codes for Manufacturers

Code	Manufacturer's name
80063	Army Electronic Command
81349	Military Specifications

SECTION II. PRESCRIBED LOAD ALLOWANCE

(1) FEDERAL STOCK NUMBER	(2) DESCRIPTION / USABLE ON CODE	(3) 15-DAY ORG. MAINT. ALLOWANCE (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-[illegible]
5355-933-2666	KNOB, SWITCH: SMC-523360; (80063)				
5820-995-2261	SLIDE HARNESS: SMB-523391; (80063)				
5985-926-2590	ANTENNA ASSEMBLY AS-1998/PRR-9				
5895-933-2878	HOUSING, ANTENNA ASSEMBLY: SMC-523218; (80063)				
5895-933-2879	LANYARD ASSEMBLY: SMB-523304; (80063)				
	HEADSET ELECTRICAL H-302(XE-1)/PRR-9 SMB-523760; (80063)				

(2) FEDERAL STOCK NUMBER	(3) DESCRIPTION Reference Number & Mfr Code USABLE ON CODE	(4) UNIT OF MEAS	(5) QTY INC IN UNIT	(6) 15-DAY ORGANIZATIONAL MAINTENANCE ALW (a) i-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIG NO.	(b) ITEM NO. OR REFERENCE DESIGNATION
	RECEIVING SET, RADIO AN/PRR-9 (XE-9) (This item is nonexpendable)							1-2	
5985-926-2590	ANTENNA ASSEMBLY AS-1998/PRR-9	ea	1	*	*	*	2	1-2	E1
	HEADSET ELECTRICAL H-302(XE-1)/PRR-9: SMB-523760; (80063)	ea	1	*	*	*	2	1-2	HT1
5985-933-2878	HOUSING, ANTENNA ASSEMBLY: SMC-523218; (80063)	ea	1	*	*	*	2	2-3	A3
5355-933-2666	KNOB, SWITCH: SMC-523360; (80063)	ea	1	*	*	*	2	5-2	MP1
	SCREW SET: SMB-523434; (80063)	ea	2					5-2	H3
5985-933-2879	LANYARD ASSEMBLY: SMB-523304; (80063)	ea	1	*	*	*	2	1-2	A4
5820-995-2261	SLIDE HARNESS: SMB-523391; (80063)	ea	1	*	*	*	2	1-2	MP3
5995-926-2663	CRYSTAL 40.3MC; CR81/U; (81349)	ea	1					5-3	Y1

SECTION V. INDEX-FEDERAL STOCK NUMBER CROSS REFERENCE TO INDEX NUMBER

FEDERAL STOCK NUMBER	INDEX NO.	FEDERAL STOCK NUMBER	INDEX NO.	FEDERAL STOCK NUMBER	INDEX NO.
5355-933-2666	A134				
5820-995-2261	A147				
5985-926-2590	A002				
5985-933-2878	A120				
5985-933-2879	A137				
5995-926-2663	A148				

REF NO.	INDEX NO.
SMB-523434	A135
SMB-523760	A113

SECTION VI. INDEX-FIGURE AND ITEM NUMBER CROSS REFERENCE TO INDEX NUMBER

IG. O.	ITEM NO. OR REFERENCE DESIGNATION	INDEX NO.
1-2	A4	A137
	E1	A002
	HT1	A113
	MP3	A147
2-3	A3	A120
5-2	H3	A135
	MP1	A134
5-3	Y1	A148

FIG. NO.	ITEM NO. OR REFERENCE DESIGNATION	INDEX NO.

SECTION VII. INDEX-REFERENCE DESIGNATION CROSS REFERENCE TO INDEX NUMBER

REFERENCE DESIGNATION	INDEX NO.	REFERENCE DESIGNATION	INDEX NO.	REFERENCE DESIGNATION	INDEX NO.
A3	A120				
A4	A137				
E1	A002				
H3	A135				
HT1	A113				
MP1	A134				
MP3	A147				
Y1	A148				

)rder of the Secretary of the Army:

W. C. WESTMORELAND,
General, United States Army,
Chief of Staff.

ial:

ENNETH G. WICKHAM,
ıjor General, United States Army,
ıe Adjutant General.

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